

AMENDMENT UNDER 37 C.F.R. §1.111
U.S. Application No. 10/083,362
Attorney Docket No. Q68702

REMARKS

Reconsideration and allowance of this application are respectfully requested. Claims 1-7, 19, 20, 22-24 and 32 have been amended. New claims 39 and 40 have been added. Claims 1-40 are pending in the application.

As a preliminary matter, Applicants bring to attention that Examiner has not indicated consideration of the Information Disclosure Statement filed on February 27, 2002. Applicants respectfully request consideration of the Information Disclosure Statement and the attachment of a copy of the initialed PTO-1449 form to the next office communication.

Applicants acknowledge with gratitude the indication that claims 5, 7, 12, 13, 15, 18, 31 and 35 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Accordingly, claims 5 and 7 have been amended to each include the elements of claims 1 and 2. Thus, claims 5 and 7 are now believed to be in condition for allowance.

Additionally, Applicants have amended claims 3, 4 and 6 to each include the elements of claims 1 and 2. Claims 22-24 and 32 have also each been amended to include the elements of claim 20. The rejections are respectfully submitted to be obviated in view of the remarks presented herein.

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Rejection Under 35 U.S.C. § 102(e) - Herman

Claims 1-4, 6, 8-11, 16, 19-29, 33 and 36-38 have been rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Herman (U.S. Patent Number 6,674,898). The rejection is respectfully traversed.

Regarding claim 1, as amended, Applicants' claimed invention relates to a video processing device comprising a correction amount obtaining means, an image correcting means, and a correction amount update determining means. The correction amount update determining means gives an instruction to update a correction amount either when a lapse of a fixed time is detected in which a number of frames from a frame image whose correction amount is lastly updated to a current frame image exceeds a predetermined value, or when a cut point is detected which is indicative of switching of a scene in sequentially applied moving images based on a change of a feature amount obtained from each frame image.

Applicants respectfully submit that the disclosure of Herman does not teach or suggest the claimed invention. Herman discloses an apparatus and method for correcting the color of objects appearing in a video image. A frame buffer receives and stores a first video frame from an incoming baseband video signal (column 1, lines 42-45). A memory stores known pixel data corresponding to a plurality of known icons, the known pixel data comprising true color data values associated with the plurality of known icons (column 1, lines 45-48). A color correction controller compares captured pixel data from the stored first video frame with the known pixel data stored in the memory and detects a first actual image of a first known icon appearing in the stored first video frame (column 1, lines 49-53). The color correction controller further

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compares a first true color data value associated with the first known icon and a first actual color data value associated with a first actual color in the first actual image of the first known icon and, in response to the comparison, determines a first color correction factor associated with the first actual color data value (column 1, lines 53-59). The color correction controller then uses the first color correction factor to correct the first actual color data value in the first actual image in the stored first video frame (column 1, lines 60-63).

However, there is no teaching or suggestion in Herman of a correction amount update determining means which gives an instruction to update a correction amount either “when a lapse of a fixed time is detected in which a number of frames from a frame image whose correction amount is lastly updated to a current frame image exceeds a predetermined value, or when a cut point is detected which is indicative of switching of a scene in said moving images based on a change of a feature amount obtained from each frame image,” as recited in amended claim 1.

In more detail, Herman, as shown in Figure 1, a screen (130) “displays a video image that may contain known, recognizable icons, such as icon 131 and icon 132, whose colors are known and constant” (column 3, lines 42-45). The known icons “include both well-known objects such as network logos and product trademarks and known human face colors” (column 4, lines 22-26). These icon shapes are stored in known icons and true colors table (260) of RAM (107) in the form of a pixel map and accurate color scheme (column 4, lines 51-53). A color correction application (240) or RAM (107) retrieves frames from an incoming signal and searches the frame for a detectable icon or shape that is stored in known icon and true colors table (260). In such a way, stored icons are used as reference signals to correct for color errors (column 4, lines 54-63).

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As shown in Figure 3, a frame buffer (350) captures individual image frames from the output of an MPEG decoder (330), whereupon a color correction controller (360) scans the captured frames and compares the pixel data in captured frames with corresponding pixel data of known icons stored in table (370) (column 5, lines 40-45). Color correction controller (360) identifies known icons and compares the actual colors, as determined from the captured frames, with the stored, known true colors of the icons (column 5, lines 45-48). Color correction controller (360) then determines correction factors for the actual colors in the displayed icons and extrapolates the color correction factors of the known icons to determine color correction factors for other colors in the video image (column 5, lines 49-53). Fully processed frames are then passed on to a display (315) (column 5, lines 55-56). Herman's process is also shown in Figure 4 and described in column 6, lines 1-30.

Herman fails to teach or suggest correction factors being updated upon a predetermined number of frames since a last update. Herman only scans a frame to determine if an icon is present in the frame. Each time Herman detects a known icon, a color correction is performed which compares the true colors of known icons with the actual colors of the detected icons. The colors of the detected icon are corrected based on determined correction factors. Additionally, correction factors may be determined for correcting other colors in the frame (column 6, lines 17-22). The determined correction factors are used for color correction of subsequent frames until new, known icons are identified in subsequent frames (column 6, lines 25-29). Thus, Herman does not update correction factors upon a predetermined number of frames since a last update.

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Additionally, Herman does not teach or suggest correction factors being updated when a cut point is detected which is indicative of switching of a scene based on a change of a feature amount. As discussed above, Herman's color correction apparatus performs color correction on a number of frames by applying particular color correction factors to the frames until an identification of new icons in a subsequent frame, upon which time new color correction factors are determined and applied to subsequent frames, whereby this process repeats (column 6, lines 1-30). Herman only detects the presence of icons in a frame, and does not detect any cut points. The presence of an icon may be maintained in Herman through a switching of a scene, or new icons may be detected during a common non-changing scene. Herman only detects the presence of icons and compares the colors of detected icons to stored true colors of known icons, to perform color correction. There is no mention or suggestion in Herman of detecting a cut point, as Applicant claim. At least by virtue of the aforementioned differences, Applicants' claim 1 distinguishes over Herman. Applicants' claims 2 and 8-11 are dependent claims including all of the elements of independent claim 1, which, as established above, distinguishes over Herman. Therefore, claims 2 and 8-11 are patentable over Herman for at least the aforementioned reasons as well as for their additionally recited features.

Regarding claim 3, as amended, Applicants' claimed invention relates to a video processing device comprising a correction amount obtaining means, an image correcting means, a correction region cutting-out means, and an image composing means. The correction region cutting-out means cuts out a region to be corrected from the moving image in question before the moving image is subjected to correction processing. The image composing means combines a

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region to be corrected which is cut out by the region cutting-out means and a region not to be corrected which is a remainder left after the region to be corrected in question is cut out.

Herman discloses an apparatus and method for correcting the color of objects appearing in a video image as discussed above. However, there is no teaching or suggestion in Herman of cutting-out a region to be corrected from the moving image in question, nor is there any teaching or suggestion in Herman of combining a region to be corrected which is cut out and a region not to be corrected which is a remainder left after the region to be corrected in question is cut-out. Herman only searches a frame retrieved from an incoming signal and searches the frame for a detectable icon or shape that is stored in memory (column 4, lines 54-56). Herman only captures and searches/scans individual image frames for known icons, from which correction factors may be determined based on the difference of actual colors from true colors of the icons. The colors of the icon and of the whole video image may be corrected based on the determined correction factors. Herman fails to mention or suggest cutting-out a region and combining regions as recited in Applicants' claim. The frames in Herman are only searched and color corrected, and a region is never cut-out from any images. At least by virtue of the aforementioned differences, Applicants' claim 3 distinguishes over Herman.

Regarding claim 4, as amended, Applicants' claimed invention relates to a video processing device comprising a correction amount obtaining means, an image correcting means, an image input means, and a correction amount change limiting means. The correction amount change limiting means limits an amount of change between a correction amount of a current

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frame image obtained by the correction amount obtaining means and a stored correction amount of a preceding frame image.

Herman discloses an apparatus and method for correcting the color of objects appearing in a video image as discussed above. However, there is no teaching or suggestion in Herman of limiting an amount of change between a correction amount of a current frame image obtained and a stored correction amount of a preceding frame image. Herman only determines correction factors and applies them to all subsequent frames until the identification of new known icons (column 6, lines 25-30). Herman does not limit change in correction amounts between successive frames. At least by virtue of the aforementioned differences, Applicants' claim 4 distinguishes over Herman.

Regarding claim 6, as amended, Applicants' claimed invention relates to a video processing device comprising a correction amount obtaining means, an image correcting means, an image input means, a cut point detecting means, and a correction amount update determining means. The cut point detecting means detects a cut point indicative of switching of a scene in the moving image based on a change of a feature amount obtained from each frame image. The correction amount update determining means gives an instruction to update the correction amount when the cut point detecting means detects the cut point.

Herman discloses an apparatus and method for correcting the color of objects appearing in a video image as discussed above. However, as also discussed above, there is no teaching or suggestion in Herman of either detecting a cut point or instructing to update the correction

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amount when the cut point is detected. At least by virtue of the aforementioned differences, Applicants' claim 6 distinguishes over Herman.

Regarding claim 16, Applicants' claimed invention relates to a video processing device comprising an image input means and a cut point detecting means. The cut point detecting means detects a cut point indicative of switching of a scene in a moving image based on a change of a feature amount obtained from each frame image obtained from sequentially applied moving images. As discussed above, Herman does not teach or suggest detecting a cut point as Applicants claim. At least by virtue of the aforementioned differences, Applicants' claim 16 distinguishes over Herman.

Regarding claim 19, as amended, Applicants' claimed invention relates to a video processing device comprising a moving image correction amount obtaining means, an image correcting means, an image display means, and a correction amount update determining means. The correction amount update determining means gives an instruction to update correction amounts either when a lapse of a fixed time is detected in which a number of frames from a frame image whose correction amount is lastly updated to a current frame image exceeds a predetermined value, or when a cut point is detected which is indicative of switching of a scene in applied moving images based on a change of a feature amount obtained from each frame image.

As discussed above, Herman does not teach or suggest instructing to update correction amount when either a lapse of a fixed time is detected or when a cut point is detected. At least by virtue of the aforementioned differences, Applicants' claim 19 distinguishes over Herman.

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Regarding claim 20, as amended, Applicants' claimed invention relates to a video processing method comprising obtaining a correction amount, conducting quality improving correction, and updating the correction amount when a lapse of a fixed time is detected or when a cut point is detected. As discussed above, Herman does not teach or suggest updating a correction amount when a lapse of fixed time is detected or when a cut point is detected, as recited in claim 20. At least by virtue of the aforementioned differences, Applicants' claim 20 distinguishes over Herman. Applicants' claims 21 and 25-29 are dependent claims including all of the elements of independent claim 20, which, as established above, distinguishes over Herman. Therefore, claims 21 and 25-29 are patentable over Herman for at least the aforementioned reasons as well as for their additionally recited features.

Regarding claim 22, as amended, Applicants' claimed invention relates to a video processing method comprising obtaining a correction amount, conducting quality improving correction, and updating a correction amount for every N frames ($N \geq 1$). Herman does not teach or suggest updating a correction amount for every N frames ($N \geq 1$) as Applicants claim. As discussed above, Herman only determines correction factors and applies them to all subsequent frames until the identification of new known icons (column 6, lines 25-30). At least by virtue of the aforementioned differences, Applicants' claim 22 distinguishes over Herman.

Regarding claim 23, as amended, Applicants' claimed invention relates to a video processing method comprising obtaining a correction amount, conducting quality improving correction, and checking an input moving image on a frame basis and when a cut point indicative of switching of a scene in the input moving image is detected, updating a correction amount. As

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discussed above, Herman does not teach or suggest updating a correction amount when a cut point is detected, as recited in Applicants' claim. At least by virtue of the aforementioned differences, Applicants' claim 23 distinguishes over Herman.

Regarding claim 24, as amended, Applicants' claimed invention relates to a video processing method comprising obtaining a correction amount, conducting quality improving correction, updating a correction amount for every N frames ($N \geq 1$), and checking an input moving image on a frame basis and when a cut point indicative of switching of a scene in the input moving image is detected, updating a correction amount. As discussed above, Herman does not teach or suggest either updating a correction amount or detecting a cut point as recited in Applicants' claim. At least by virtue of the aforementioned differences, Applicants' claim 24 distinguishes over Herman.

Regarding claim 32, as amended, Applicants' claimed invention relates to a video processing method comprising obtaining a correction amount, conducting quality improving correction, cutting out a region to be corrected from a moving image in question, subjecting the cut-out image to be corrected to image correction, and combining the region to be corrected which is subjected to image correction and a region not to be corrected which is a remainder left after the region to be corrected in question is cut out to output the combined image. As discussed above, Herman fails to mention or suggest cutting-out a region and combining regions as recited in Applicants' claim. The frames in Herman are only searched and color corrected, and a region is never cut-out from any images. At least by virtue of the aforementioned differences, Applicants' claim 32 distinguishes over Herman.

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Regarding claim 33, Applicants' claimed invention relates to a video processing method comprising obtaining a frame image from sequentially applied moving images, and detecting a cut point indicative of switching of a scene in the moving image based on a change of a feature amount obtained from each frame image. As discussed above, Herman does not teach or suggest detection of a cut point. At least by virtue of the aforementioned differences, Applicants' claim 33 distinguishes over Herman.

Regarding claim 36, Applicants' claimed invention relates to a video processing program for controlling a computer to execute video processing comprising obtaining at least one correction amount from moving images sequentially applied to the computer, comparing the obtained correction amount with a correction amount obtained from at least one of preceding past frames to suppress a change in correction amount, and subjecting a frame image to quality improving correction based on the suppressed correction amount. As discussed above, Herman does not teach or suggest suppression of a change in correction amount. At least by virtue of the aforementioned differences, Applicants' claim 36 distinguishes over Herman.

Regarding claim 37, Applicants' claimed invention relates to a video processing program for controlling a computer to execute video processing comprising obtaining at least one correction amount from moving images sequentially applied to the computer, detecting a cut point indicative of switching of a scene in an input moving image based on a change of a feature amount obtained from a frame image of the moving image in question, comparing the obtained correction amount with a correction amount obtained from at least one of preceding past frames and suppressing an amount of change in correction amount in consideration of existence/non-

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existence of a cut point, and subjecting a frame image to quality improving correction based on the suppressed correction amount. As discussed above, Herman does not teach or suggest detection of a cut point and suppression of a change in correction amount. At least by virtue of the aforementioned differences, Applicants' claim 37 distinguishes over Herman.

Regarding claim 38, Applicants' claimed invention relates to a video processing program for controlling a computer to execute video processing comprising obtaining a frame image from sequentially applied moving images, and detecting a cut point indicative of switching of a scene in the moving image based on a change of a feature amount obtained from each frame image. As discussed above, Herman does not teach or suggest detection of a cut point. At least by virtue of the aforementioned differences, Applicants' claim 38 distinguishes over Herman.

Reconsideration and withdrawal of the rejection under 35 U.S.C. § 102(e) are respectfully requested.

Rejection Under 35 U.S.C. § 103(a) - Herman

Claims 14, 17, 30 and 34 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Herman. The rejection is respectfully traversed.

As discussed above, Herman fails to teach or suggest Applicants' claimed invention as recited in respective independent claims 1, 16, 20 and 33. Applicants' claims 14, 17, 30 and 34 are dependent claims including all of the elements of independent claims 1, 16, 20 and 33, respectively, which, as established above, distinguish over Herman. Additionally, Herman fails to teach or suggest that a result of comparison of a color histogram generated based on color information of each pixel of the image which is conducted on a frame basis is considered as a

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feature amount and a cut point of the moving image is detected based on a change of the feature amount, as Applicants claim. Therefore, claims 14, 17, 30 and 34 are patentable over Herman for at least the aforementioned reasons as well as for their additionally recited features.

Reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) are respectfully requested.

Newly Added Claims

Claims 39 and 40 have been newly added to provide more varied protection for the present invention¹. Claims 39 and 40 are allowable based on at least their dependencies, as well as for their additionally recited features. That is, the cited references do not teach or suggest correction region cutting-out means and image composing means, as recited by claim 39. The cited references also do not teach or suggest cutting out a region to be corrected, subjecting the cut-out image to be corrected to image correction, and combining the region to be corrected and a region not to be corrected, as recited in claim 40.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

¹ Newly added claims 39 and 40 correspond generally to original claims 3 and 32 respectively.

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Respectfully submitted,



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